TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. M190699P2-99

I. INTRODUCTION

This permit is for the operation of an open pit mine and mineral concentration facility which is located about eight miles west of Green Valley in Pima County, Arizona. Green Valley lies about 25 miles south of the city of Tucson, Arizona. Phelps Dodge Sierrita operations (previously Cyprus Sierrita Corporation) include conventional crushing and flotation followed by differential flotation, leaching and roasting of molybdenum disulfide, rhenium recovery, molybdenum disulfide production and packaging, molybdenum trioxide production and packaging, and leach dump/solution extraction/electrowinning.

A. Company Information

Facility Name:	Phelps Dodge Sierrita, Inc.
Mailing Address:	P.O. Box 527, Green Valley, AZ 85622-0527
Facility Address:	6200 West Duval Mine Road, Green Valley, AZ 85622-0527
Responsible Official:	Mr. Robert F. Wishart, President

B. Attainment Classification (Source: 40 CFR §81.303)

This source is located in an attainment area for all pollutants.

II. PROCESS DESCRIPTION

Phelps Dodge Sierrita, Inc. (PDSI) produces copper concentrate and cathode copper, molybdenum products and rhenium. The following process description is excerpted from PDSI's Title V permit application submitted June 25, 1997.

A. Mining Operations

PDSI currently has five active open pits which consist of the Sierrita pit, the Esperanza pit, the Ocotillo pit, and two Twin Buttes pits (Twin Buttes East and Twin Buttes West). Ore production from each pit is highly variable; however the aggregate production is limited to the capacity of the plant operation. Point source emissions occur from six primary crushers which reduce the ore to minus six inches in diameter. Four are located in the Sierrita pit, one in the west Twin Buttes Pit and one near the Esperanza Mill building. Fugitive emissions occur from blasting operations, and also from the removal and transport of blasted materials.

PDSI utilizes wet dust collectors and water sprays to control particulate emissions at the primary crushers and water trucks for dust control on haul roads and inside the pit. Emissions during drilling are controlled by the utilization of water. Blasting is an uncontrolled process.

As required for maintenance and repair work, PDSI may temporarily shut down a dust collector used to control particulate emissions from equipment that is either located within a building or enclosed below ground. PDSI will continue to comply with the applicable opacity standard in R18-2-702(b). PDSI will continue to comply with the process weight standard specified under R18-2-721 or 40 CFR 52.126(b). Appropriate notification, recordkeeping, and monitoring requirements for such time periods have been specified in the permit.

Alternate Operating Scenario

PDSI was issued minor revision #1000696 on September 29, 1998, allowing them to move one of the primary crushers from the Sierrita pit (Source ID 001) to another site at the mine. Currently, only the crusher housing is in place at the second location - identified as Source ID 067. PDSI has requested to keep this option in the Title V permit as an alternate operating scenario. A wet scrubber would be added to the crusher at the new location, since one wet scrubber controls emissions from the two crushers located in the Sierrita pit.

B. Overland Ore Transport

The primary crushed ore from the mining pits is transported via haul trucks (Twin Buttes, Ocotillo) and/or conveyor systems (Sierrita, Esperanza, Ocotillo) which are sources of particulate matter emissions. The crushed ore is stockpiled before being further crushed in the Sierrita or Esperanza crushing circuits.

Air pollution control measures include enclosed transfer points and automatic water sprays. In addition, water trucks are used to control dust on the haul roads.

C. Outdoor Storage Piles

Storage piles consist of raw and crushed coarse ore and copper concentrate, which are sources of fugitive emissions.

Other than use of proper material handling practices such as minimizing drop points and wetting the crushed ore, no air pollution control is employed for the storage piles.

D. Fine Ore Crushing

Ore from the coarse ore stockpiles is conveyed to the fine ore crushing building where two stages of further size reduction occur (i.e., secondary and tertiary crushing). The final product from the system is typically classified as minus three-quarter inch in diameter, which is then fed into the grinding and primary flotation circuit.

Particulate emissions from this operation are controlled by wet dust collectors and/or water sprays.

As required for maintenance and repair work, PDSI may temporarily shut down a dust collector used to control particulate emissions from equipment that is either located within a building or enclosed below ground. PDSI will continue to comply with the applicable opacity standard in R18-2-702(b). PDSI will continue to comply with the process weight standard specified under R18-2-721 or 40 CFR 52.126(b). Appropriate notification, recordkeeping, and monitoring requirements for such time periods have been specified in the permit.

E. Milling/Grinding and Flotation

Crushed fine ore is stored in the Sierrita mill building fine ore storage bins prior to grinding and primary flotation with chemical reagents. Emissions from this operation consist of particulate and small quantities of fugitive VOC, due to the chemical reagents which aid in the flotation of mineral components. A second flotation circuit is used to separate molybdenum disulfide from the final copper concentrate. The underflow from this flotation is thickened and filtered to produce the final copper concentrate which is shipped by rail to an off-site smelter for copper recovery or stored on site.

Particulate matter emissions from this operation are controlled by fabric filters (fine ore bins) and wet dust collectors (mill feed belt system).

F. Unleached Molybdenum Plant

After separation from the copper concentrate, the molybdenum disulfide is upgraded, filtered and dried to enable further refining. Emissions consist of particulate matter from drying and material handling operations.

Particulate matter emissions from the storage bins and material handling are controlled by fabric filters, and particulate matter emissions from the material dryers are controlled by wet dust collectors.

G. Molybdenum Leaching and Drying Plant

The unleached molybdenum disulfide still contains some copper and lead sulfide residuals which are reduced by a hydrometallurgical process involving a hot ferric chloride ($FeCl_3$) leach. Following the hydrometallurgical process the liquid is separated from the solids, followed by recovery of the dissolved copper as cement copper, and regeneration of the leach liquor through chlorination. The leached molybdenum disulfide is dried and stored in bins. Potential emissions sources from this operation include the chlorination circuit, molybdenum disulfide bins, material transfer points, and material dryers.

Particulate emissions from storage bins and material handling are controlled by fabric filters, and particulate emissions from the material dryers are controlled by wet dust collectors.

As required for maintenance and repair work, PDSI may temporarily shut down a dust collector used to control particulate emissions from material handling equipment that do not generate visible emissions. PDSI will continue to comply with the applicable opacity standard in R18-2-702(b). PDSI will continue to comply with the process weight standard specified under R18-2-721 or 40 CFR 52.126(b). Appropriate notification, recordkeeping, and monitoring requirements for such time periods have been specified in the permit.

H. Molybdenum Roasting & Rhenium Recovery

The leached molybdenum sulfide is roasted to yield molybdic trioxide (MoO_3). This process is a source of particulate matter and sulfur dioxide (SO_2). The roaster emissions are passed through cyclones and electrostatic precipitators (ESPs) to recover solids which are recycled back to the roasters. Next, SO_2 is scrubbed through a lime slurry scrubber and the cleaned gas passes through mist eliminators to remove liquid droplets.

The molybdenum roasting operations also have a rhenium recovery circuit. When it is operational, the rhenium oxide in the gas from the ESPs is condensed, collected, concentrated, and pumped to an ion exchange process for refining and shipment.

As discussed above, air pollution control devices for this operation include cyclones, electrostatic precipitators, lime slurry scrubbers and mist eliminators. The control system for the roaster emissions includes a maintenance stack which could potentially allow the roaster emissions to be discharged directly to the atmosphere once they exit the ESP, without going through the scrubber. The use of the maintenance stack is allowed only after the feed termination delay time has elapsed.

Particulate emissions from the MoO_3 storage bins are controlled by low-temperature fabric filters. Fugitive emissions occur from unenclosed transfer points.

Alternate Operating Scenario

As an alternative to the feed termination delay procedures noted above, PDSI has requested, as an alternate operating scenario, the option to demonstrate compliance with the sulfur capture requirements of R18-2-721.E/State SIP R9-3-521 through the use of a continuous monitoring system to measure sulfur dioxide emissions from the main stack and a measurement of input sulfur to the roasters. The permit requires the approval by the director of a quality assurance/quality control plan for the operation of the sulfur dioxide continuous monitoring system and the measurement of roaster input sulfur.

I. Ferromolybdenum Alloy Production

PDSI has discontinued ferromolybdenum production.

J. Cannery Operation

The majority of the MoO_3 product is packaged in the cannery for shipment.

Particulate emissions generated by the product packaging operation are controlled by a fabric filter.

K. Outdoor Leach Fields

Low grade oxide ore and waste rock from the Sierrita mining operation, along with some Twin Buttes oxide ore, are heaped in layers in an active area of about seven million square feet. A leach solution of dilute sulfuric acid (H_2SO_4) is applied through a pumping and sprinkling configuration, collected, and processed by a SXEW operation to produce copper metal.

No significant air emissions occur from this process.

L. SX/EW Operation

The solution extraction and electrowinning (SXEW) process is designed to recover copper leached from the oxide leach field leachate. Solution extraction concentrates the copper from the pregnant leach solution and transfers it to an electrolyte solution. The Twin Buttes Tankhouse contains electrowinning cells in which copper is plated out from the electrolyte solution. The use of an organic phase (diluent) which includes an extraction reagent (which transfers the copper in pregnant leach solution to electrolyte), is a potential source of fugitive VOC emissions from the mixer-settlers. In addition, there is a potential for VOC emissions fromthe diluent storage tank(s). The actual recovery of copper through the electrowinning process is achieved at the Twin Buttes tankhouse.

Air pollution control devices include covered mixer-settler tanks in the SX process and polypropylene balls and foam in the electrowinning process.

M. Outdoor Surface Impoundments

The outdoor surface impoundment operation includes the various thickeners and the tailings areas for the respective mining pits. There is a potential for fugitive particulate emissions due to wind erosion of dry areas of the tailings impoundments.

Dust control measures in the tailings impoundment include the rotation of tailings deposit, and the use of water trucks.

N. Unpaved Roads

There is a potential for fugitive particulate emissions from haul roads and vehicular traffic on unpaved roads inside the plant perimeter.

Dust control measures for unpaved roads include dust suppression utilizing water and magnesium chloride, or other dust suppressants.

O. Fixed Storage Tanks

There is a potential for air pollutant emissions from vents of various storage tanks used for chemical reagents, raw materials, in-process materials, and finished products.

Air pollution control measures include submerged filling for gasoline tanks.

P. Plantwide Solvent Usage

The plant and the analytical laboratory utilize a number of solvents for various cleaning and maintenance activities. Some of these solvents or chemical formulations contain regulated chemical compounds which may contribute to emissions of VOCs. Many of these activities represent insignificant or exempted sources.

Q. Crushed Rock Products

Waste rock is crushed in a portable crushing plant to produce paving material for on-site roads. The portable plant consists of a grizzly feeder, conveyors, a screen, a crusher and product stackers.

Particulate emissions are controlled by wet sprays at the crusher. Fugitive emissions may result from unenclosed material conveying systems, the grizzly feeder, the screen, and loading and unloading operations.

R. Boilers

Boilers are used at PDSI in several production areas, including the molybdenum drying and SX/EW areas. All boilers are natural gas fired, with propane as a back-up. The boilers range in size from 1.2 to 38 MMBtu/hr.

There are no controls on any of the boilers.

S. Portable Dump Hoppers/Screens/Grizzlies

Miscellaneous portable dump hoppers/screens/grizzlies are used to facilitate cleanup or classify trench bedding and other fine soil materials.

Fugitive emissions may result from the unenclosed hoppers, screens or grizzlies and loading or unloading operations.

III. EMISSIONS

PDSI is classified as a Class I, “major source” pursuant to A.A.C. R18-2-101.64. The potential emission rates of the following pollutants are greater than 100 tons per year: (i) particulate matter, (ii) particulate matter less

than 10 microns and (ii) sulfur dioxide.

IV. COMPLIANCE HISTORY

A Compliance and Enforcement Chronology dating back to September 17, 1971, is attached as Appendix B.

Compliance Certifications and Compliance Plan

PDSI has included a compliance certification signed by the responsible official certifying that the statements contained in the application are true, accurate, and complete.

PDSI has specified in Section 6 of the permit application that it operates all emission units in compliance with applicable requirements and will continue to comply with all applicable requirements under the existing operating permits. In addition, PDSI will comply with all applicable requirements that become effective during the permit term on a timely basis.

A Consented to Order of Abatement was filed on December 23, 1997 which amends the use of the scrubber maintenance operating scenario. The provisions of the Consent Order of Abatement that are included in the title V permit are located in Section VI - Previous Permits and Conditions.

V. APPLICABLE REGULATIONS

PDSI is located in Green Valley which is within Pima County. The table below provides a stringency test for the Pima County Code and the Arizona Administrative Code and the applicable State Implementation Plan. It was necessary to compare and streamline the rules in all four sources of regulations, as the current and applicable SIPs do not match, either for the state or for Pima County.

The Arizona State and Pima County codes contain different process weight rate equations for nonferrous metals industry sources and gravel or crushed stone processing plants. The SIP and PCC equations are more stringent, and are incorporated into the permit. In addition, the Pima County SIP states that no visible emissions shall cross the property boundary line, and requires that reasonable precautions be made to control the generation of airborne particulate matter. These requirements are incorporated into the Title V permit.

Table 1: Conformity Test Between Arizona Administrative Code (AAC) Title 18, Chapter 2 and Applicable State Implementation Plan (SIP) Title 9, Chapter 3 with the Pima County Code (PCC) Title 17, Chapter 16 Rules and Pima County State Implementation Plan (SIP)

PCC/PC SIP	AAC/SIP	MORE STRINGENT RULE
ARTICLE III. EMISSIONS FROM EXISTING AND NEW NONPOINT SOURCES		
17.16.050 / Rule 343 Visibility Limit Standard	R18-2-702	Equivalent - except PCC 17.16.050.D has the additional requirement that no visible emissions shall cross the property boundary line. This is incorporated in the permit.
17.16.080 Vacant lots and open areas	R18-2-604	Equivalent - The language is not exactly the same, however the two rules are equally stringent
17.16.090 Roads and streets	R18-2-605	Equivalent
17.16.100 Particulate Materials	R18-2-605.B, -606	Equivalent
17.16.110 Storage Piles	R18-2-607.A	Equivalent
17.16.120 Mineral Tailings	R18-2-608	Equivalent
ARTICLE IV. NEW AND EXISTING STATIONARY SOURCE PERFORMANCE STANDARDS		
17.16.160 Fossil-fuel fired steam generators and general fuel burning equipment	R18-2-724	Identical - The language is exactly the same.
17.16.230 Standards of performance for storage vessels for petroleum liquids	R18-2-710	Identical
17.16.340 Standards of performance for rotating machinery	R18-2-719	Identical
17.16.360 Standards of performance for nonferrous metals industry sources	R18-2-721 R9-3-521	R9-3-521 and PCC 17.16.360 are equally stringent and both more so than the A.A.C. The process weight rate equation differs.
17.16.370 Standards of performance for gravel and crushed stone processing plants	R18-2-722 R9-3-522	R9-3-522 and PCC 17.16.370 are equally stringent and both more so than the A.A.C. The process weight rate equation differs.
17.16.430 Standards of performance for unclassified sources	R18-2-730 R9-2-502	R9-3-502 and PCC 17.16.430 are equally stringent and both more so than the A.A.C. The process weight rate equation differs.

The above table lists all the permit conditions applicable to the PDSI for which there are more than one state or local rule. The table below delineates which regulation was chosen to be in the permit, as it provides the underlying authority or more stringent rule, to which the source is subject.

Table 2 below gives the source number and the appropriate applicable regulation, by process.

Table 2: Applicable Regulations

SOURCE NO.	PROCESS DESCRIPTION	CONTROL EQUIPMENT	REGULATIONS IN PERMIT	VERIFICATION
MINING - PRIMARY CRUSHING OPERATIONS				
001	Primary crushing - Sierrita pit	Wet scrubber, water sprays	A.A.C. R18-2-702.B State SIP R9-3-521 P.C. SIP Rule 343	This equipment was installed prior to 8/24/82 and is therefore subject to State SIP R9-3-521. Particulate Matter Limit: $E = 17.31P^{0.16}$ Visible Emissions (VE): 40% Opacity no VE beyond property line
067	Primary crushing - Crusher housing only (see alternate operating scenario)	Water sprays Scrubber to be installed before operation		
101	Primary crushing - Twin Buttes	High efficiency Rotoclone		
034	Primary crushing - Esperanza	Wet Scrubber		
089	Ammonium Nitrate Storage	No Control		
068, 069, 070, 071, 095, 096, 103	Overland Ore Transport - Sierrita, Esperanza, Twin Buttes	Water sprays		
113	6A & 6B Primary Crushers	Wet Scrubber	40 CFR 60, Subpart LL P.C. SIP Rule 343	This crusher was installed after 8/24/82 and is therefore subject to 40 CFR 60 Subpart LL. Particulate Matter Limit: 0.05 grams/dscm Monitoring for scrubber: gas flow pressure drop scrubbing fluid flow rate
FINE ORE CRUSHING OPERATIONS - SECONDARY AND TERTIARY CRUSHING				
039, 040, 002-007	Fine Ore Crushing and Transfer Points - Esperanza, Sierrita	Wet Scrubbers	A.A.C. R18-2-702.B State SIP R9-3-521 P.C. SIP Rule 343	This equipment was installed prior to 8/24/82 and therefore subject to State SIP R9-3-521. Particulate Matter Limit: $E = 17.31P^{0.16}$ Visible Emissions: 40% Opacity no VE beyond property line
008	Fine Ore Transfer - Sierrita	Wet Scrubber		
035-036	Fine Ore Storage, Material Handling, and Transfer Points- Esperanza	Wet Scrubber		

SOURCE NO.	PROCESS DESCRIPTION	CONTROL EQUIPMENT	REGULATIONS IN PERMIT	VERIFICATION
112	Fine Ore Crushing and Two EC-1 Discharge Screens	Wet Scrubber	40 CFR 60, Subpart LL P.C. SIP Rule 343	This equipment was installed after 8/24/82 and therefore may be subject to 40 CFR 60 Subpart LL. PDSI disputes that these facilities are subject to 40 CFR 60 Subpart LL, however, it has volunatarily agreed to the emission limitations and monitoring required by 40 CFR 60 Subpart LL. Particulate Matter Limit: 0.014 grams/dscm established in significant revision #1000088 Monitoring: gas flow pressure drop scrubbing fluid flow rate
074	No. 7A Bin and Two Feeder Belts and Screens, Transfer Points - Sierrita	Wet Scrubber	40 CFR 60, Subpart LL P.C. SIP Rule 343	This equipment was installed after 8/24/82 and therefore may be subject to 40 CFR 60 Subpart LL. PDSI disputes that these facilities are subject to 40 CFR 60 Subpart LL, however, it has volunatarily agreed to the emission limitations and monitoring required by 40 CFR 60 Subpart LL. Particulate Matter Limit: 0.014 grams/dscm established in significant revision #1000088 Monitoring: gas flow pressure drop scrubbing fluid flow rate

SOURCE NO.	PROCESS DESCRIPTION	CONTROL EQUIPMENT	REGULATIONS IN PERMIT	VERIFICATION
075	Sierrita Secondary Scalping Screens	Wet Scrubber	40 CFR 60, Subpart LL P.C. SIP Rule 343	This equipment was installed after 8/24/82 and therefore may be subject to 40 CFR 60 Subpart LL. PDSI disputes that these facilities are subject to 40 CFR 60 Subpart LL, however, it has volunatarily agreed to the emission limitations and monitoring required by 40 CFR 60 Subpart LL. Particulate Matter Limit: 0.014 grams/dscm established in significant revision #1000088 Monitoring: gas flow pressure drop scrubbing fluid flow rate
093	Road Rock Crushing and Screening Plant	Spray Bars	A.A.C. R18-2-702.B State SIP R9-3-522 P.C. SIP Rule 343	This equipment was installed prior to 8/31/83 and is therefore subject to State SIP R9-3-522. Particulate Matter Limit: $E = 17.31P^{0.16}$ Visible Emissions: 40% Opacity no VE beyond property line
MILLING/GRINDING AND FLOTATION				
009-017	Fine Ore Storage - Sierrita	Baghouse	A.A.C. R18-2-702.B State SIP R9-3-521 P.C. SIP Rule 343	This equipment was installed prior to 8/24/82 and is therefore subject to State SIP R9-3-521. Particulate Matter Limit: $E = 17.31P^{0.16}$ Visible Emissions: 40% Opacity no VE beyond property line
116	8B/8C Transfer	Wet Scrubber		
018-033	Dry Material Handling System	Wet Scrubber		
063	Slaked Lime Handling System	Dust Collector	A.A.C. R18-2-702.B State SIP R9-3-502	This equipment was installed prior to 8/24/82 and is therefore subject to State SIP R9-3-502. Process weight rate equation: $E = 17.31P^{0.16}$ Visible Emissions: 40% Opacity no VE beyond property line

SOURCE NO.	PROCESS DESCRIPTION	CONTROL EQUIPMENT	REGULATIONS IN PERMIT	VERIFICATION
MOLYBDENUM PLANT				
042	Molybdenum Sulfide Storage, Crushing, Screening, and Handling	Baghouse	A.A.C. R18-2-702.B State SIP R9-3-521 P.C. SIP Rule 343 Consented to Order of Abatement signed 12/19/97	This equipment is subject to State SIP R9-3-521. Process weight rate equation: $E = 3.59P^{0.62}$ Visible Emissions: 40% Opacity no VE beyond property line Sulfur Limit: 10% of sulfur in feed material
041	Unleached Molybdenum Dryers	Wet Scrubber		
059	Cannery Baghouse	Baghouse		
053, 054	Leached Molybdenum Dryers	Wet Scrubber		
056, 058	Molybdenum Roasting and Rhenium Recovery	Multi Cyclone, ESP, Lime Slurry Scrubber, Mist Eliminator		
048	Molybdenum Oxide Storage, Crushing, Screening, and Handling	Baghouse		
046	Material Storage Bins	Baghouse		
118	Molybdenum Leach Plant	No controls		
119	Rhenium Recovery Operations	No controls		
NATURAL GAS HEATERS AND BOILERS				
062	Boiler - Moly Leach Heating (Primary)	No controls	A.A.C. R18-2-724 P.C. SIP Rule 343	These boilers were installed before October 3, 1977 and are smaller than 10 MMBtu/hr, therefore the NSPS standards do not apply. (ID 084 is larger than 10 MMBtu/hr but predates NSPS standards.) Particulate matter: $E = 1.02Q^{0.769}$ Visible Emissions: 15% Opacity no VE beyond property line Sulfur Dioxide: 1.0 lb/MMBtu
	Rhenium Plant Calcining Operations and Hot Water Heater			
	NG Heater - Moly Dryer Oil Heating System 1 and 2			
	Change Room Boiler			
	SX Electrolyte Heater			
	Moly Autoclave Heater			
	EW Cathode Wash Heater			
	Moly Briquette Heater			

SOURCE NO.	PROCESS DESCRIPTION	CONTROL EQUIPMENT	REGULATIONS IN PERMIT	VERIFICATION
	Moly Leach Heating (Standby)			
	Miscellaneous fuel burning equipment fired at sustained rate of less than 1 million BTU/hr			
SX/EW OPERATION				
076	SX Plant #1, SX Plant #2, SX Plant #3	No controls	A.A.C. R18-2-730	This operation is subject to A.A.C. R18-2-730. The operation must not cause the emission of gaseous or odorous material and materials, including solutions, utilized in the process shall be processed, stored, used and transported in such a manner that they will not evaporate, leak, escape or otherwise be discharged into ambient air so as to cause or contribute to air pollution.
MISCELLANEOUS NONPOINT OPERATIONS				
066	Blasting	None	A.A.C. R18-2-612 P.C. SIP Rule 343	This is a nonpoint source subject to A.A.C. R18-2-612. The source must not permit opacity in excess of 40%, and allow no VE beyond property line.
088	Drilling Operations	Water shrouding as necessary	A.A.C. R18-2-612 P.C. SIP Rule 343	This is a nonpoint source subject to A.A.C. R18-2-612. The source must not permit opacity in excess of 40%, and allow no VE beyond property line.
072, 073, 102, 106	Outdoor Storage Piles - coarse ore and copper concentrate	None	A.A.C. R18-2-607 P.C. SIP Rule 343	This operation is subject to A.A.C. R18-2-607. The source must take reasonable precautions such as chemical stabilization, wetting, or covering to prevent dust. Stacking machinery shall have minimum fall and spray bars.
097, 077	Haul Truck Dumping and Unpaved Roads	Water Sprays	A.A.C. R18-2-605 P.C. SIP Rule 343	This operation is subject to A.A.C. R18-2-605. The source must take reasonable precautions to prevent dust, and allow no VE beyond property line.
078	Fixed Roof Storage Tanks	None	A.A.C. R18-2-710 P.C. SIP Rule 343	This equipment is subject to A.A.C. R18-2-710, and allow no VE to cross property line.
087	Sierrita Tailings Impoundment	Tailing Impoundment Management Plan	A.A.C. R18-2-608 P.C. SIP Rule 343	This source is subject to A.A.C. R18-2-608, and allow no VE to cross property line.

SOURCE NO.	PROCESS DESCRIPTION	CONTROL EQUIPMENT	REGULATIONS IN PERMIT	VERIFICATION
105	Twin Buttes Electrowinning Tankhouse	Surfactant, Polypropylene Balls	A.A.C. R18-2-730	This operation is subject to A.A.C. R18-2-730. The operation must not cause the emission of gaseous or odorous material and materials, including solutions, utilized in the process shall be processed, stored, used and transported in such a manner that they will not evaporate, leak, escape or otherwise be discharged into ambient air so as to cause or contribute to air pollution.
120	Miscellaneous Screens and Grizzlies	None	A.A.C. R18-2-606 P.C. SIP Rule 343	This is a nonpoint source subject to A.A.C. R18-2-606. The source must use reasonable precautions to prevent dust, and allow no VE beyond property line.
044	Moly Sulfide Dump Hopper	None	A.A.C. R18-2-606 P.C. SIP Rule 343	This is a nonpoint source subject to A.A.C. R18-2-606. The source must use resonable precautions to prevent dust, and allow no VE beyond property line.
045 & 117	Moly Screw Conveyor Loadout #1 & #2	None	A.A.C. R18-2-606 P.C. SIP Rule 343	This is a nonpoint source subject to A.A.C. R18-2-606. The source must use resonable precautions to prevent dust, and allow no VE beyond property line.

VI. PREVIOUS PERMITS AND CONDITIONS

A. Previous Permits

Table 3 below presents the permits which have been issued to PDSI, prior to the Title V permit.

Table 3: Previous Permits

PERMIT NO.	ISSUE DATE	APPLICATION BASIS
ADHS 0128	5/19/76	Operating permit for ferro-molybdenum plant
1167	3/11/83	Installation permit for portable primary crusher
0317-84	8/1/84	Operating Permit for Sierrita Mine
0366-89	10/27/88	Operating Permit for Twin Buttes Mine
1214	2/7/89	Installation Permit for Twin Buttes overland conveyor belt system
2307	2/25/91	Installation Permit for El Jay portable crushing/screening plant
1000030	2/27/95	Minor Revision for a roll crusher
1000088	5/10/95	Significant Revision for scrubber replacement
1000335	9/4/96	Minor Revision for two crushers and associated equipment
1000540	12/2/97	Minor Revision for pilot-scale autoclave and calciner plant with dryer
1000739	4/10/98	Administrative Amendment to change name of General Manager
1000696	9/29/98	Minor Revision to relocate a primary crusher
1000877	11/25/98	Minor Revision for addition and relocation of air pollution control equipment
1000998	3/11/99	Minor Revision for addition of a tertiary crusher in place of an existing roll crusher
1001264	8/22/2000	Minor revision to replace four three-way scalping screens in the fine crushing plant
1001020	Appln withdrawn	Minor Revision for 7A bin and two screens
1001450	4/10/01	Minor Revision to replace a tertiary crusher and screen
1001697	11/2/01	Minor Revision for addition of a leached molybdenum disulfide loadout screw conveyor

The title V permit also contains conditions which are a result of the Consented to Order of Abatement executed December 23, 1997. These are summarized in table 4 below. All reports required by the consent order have been submitted by PDSI (previously Cyprus Sierrita) and approved by ADEQ.

Table 4: Results of Consented to Order of Abatement

ACTION REQUIRED IN THE FOLLOWING AREAS	INCLUDED IN TITLE V
Elimination of roaster scrubber bypass, unless control of reduced sulfur maintained at ten percent "Roof mode" prohibited	PDSI has adopted the "feed termination delay time" strategy to comply with this order. Feed to the roaster is terminated approximately 8 hours in advance of scrubber shut-down for maintenance. This is the time necessary for 90% of the reduced sulfur in the feed to be eliminated. The Title V permit includes requirements for testing, monitoring and use of the feed termination delay time. Roof mode has been prohibited.
Elimination of skillets	Skillets were used to manually close off the duct work from the roaster to the scrubber. They have been replaced with automated gate valves, and the new method of operation approved by ADEQ. No provisions were necessary to be included in the Title V permit.
Work Plans - Tailings Impoundment and Odor Reports	There were numerous citizen complaints regarding visible emissions from the tailings dam and odor emanating from the mine. The Consent Order required comprehensive assessments and reports on the tailings dam and industrial odor sources. The Odor Impact Report showed that there were no sources of odor above detection thresholds, and no action was recommended. The Tailings Impoundment Dust Control Plan has been submitted and approved, and compliance with the plan is included in the Title V permit.
Reports on Long Term Solutions	PDSI has submitted their report on the possible long term solutions for their molybdenum roasting operations. Title V permit conditions V(B)(4), V(C)(1)(b), V(C)(2), and V(D)(3)-(6) contain : (i) operational requirements designed to ensure compliance with the standard, and (ii) monitoring requirements designed to assess compliance with the standard.
Programmable Logic Control System (PLCS) - certify that the system is in good working order and that it will be maintained as such.	The required certification was made and approved by ADEQ. PDSI has replaced the PLCS with a new logic control system, the Moore APACS. It was not necessary to include any provisions in the Title V permit.
Component Failure Analysis	PDSI submitted the component failure analysis which was approved by ADEQ. It was not necessary to include any provisions in the Title V permit.

B. Previous Permit Conditions

The following tables describe the previous permit conditions from each permit in the table above, and how they are incorporated into the Title V permit. The italicized portions provide a description of each previous permit condition.

OPERATING PERMIT NO. 0317-84

Air quality control operating permit, no. 0317-84 was issued to the Duval Corporation - Sierrita Property in August of 1984 to operate equipment associated with the mining and concentrating of copper/molybdenum ores.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
I				**T**	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Operate in compliance with A.A.C. R18-2-521.*
II				**T**	Att. A	Same as above. *Non-point sources.*
III				**T**	Att. A	Same as above. *Malfunction.*
IV				**T**	Att. A	Same as above. *Right to Entry.*
V				**T**	Att. A	Same as above. *Transfer of Ownership.*
VI				**T**	Att. A	Same as above. *Right to Revoke.*
VII				**T**	Att. A	Same as above. *Posting of Permit.*
VIII.A		**T**			Att. B	Condition is hereby carried over to the Title V permit as a part of this Title V permit renewal. *A.A.C. R18-2-721.E.*
VIII.B			**T**			This condition was revised in the Consented to Order of Abatement. *Scrubber bypass.*
VIII.C			**T**			This condition required Duval to submit a fugitive dust control plan for the tailings impoundment by July 13, 1984. Since the Permittee has already complied with this condition, this condition is deleted as a part of this Title V permit renewal.
IX				**T**	Att. A	Condition is hereby streamlined as a part of this Title V permit renewal. *Permit Revocation.*
X				**T**	Att. A	Same as above. *Violations.*

OPERATING PERMIT NO. 0366-89

This operating permit was issued to Cyprus for mining, crushing, and conveying equipment including: a crusher, water truck, and SXEW equipment.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
I				T	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Operate in compliance with A.A.C. R18-2-521, -510, -502.*
II				T	Att. B	Same as above. *Non-point Sources.*
III				T	Att. A	Same as above. *Malfunction.*
IV				T	Att. A	Same as above. *Right to Enter.*
V				T	Att. A	Same as above. *Transfer of Ownership.*
VI				T	Att. A	Same as above. *Posting of Permit.*
VII				T	Att. A	Same as above. *Permit Revocation.*
VIII				T	Att. A	Same as above. *Violations.*
IX				T	Att. A	Same as above. *Renewal of Permit.*
X				T	Att. A	Same as above. *Compliance with Other Law.*
XI.A			T			This condition required Cyprus to submit a plan to control the emissions of particulate matter from nonpoint sources within 30 days. Since Cyprus has already complied with this condition, this condition is deleted as a part of this Title V permit renewal.
XI.B			T			This condition required Cyprus to provide written notification of the date of start-up of the primary crushing facility within 30 days. Since Cyprus has already complied with this condition, this condition is deleted as a part of this Title V permit renewal.
XI.C			T			This condition required Cyprus to perform a mass emissions test on the primary crushing facility within 180 days. Since Cyprus has already complied with this condition, this condition is deleted as a part of this Title V permit renewal.
XI.D				T	Att. A	Condition is hereby streamlined as a part of this Title V permit renewal. *"This permit is subject to modification."*

INSTALLATION PERMIT NO. 1214

Cyprus obtained this installation permit for the overland conveyor belt system to transport crushed ore from the Twin Buttes mine to the Sierrita crushing plant in 1989.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
1				**T**	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Comply with A.A.C. R18-2-801.38.*
2		**T**			Att. B	This condition to enclose all conveyor transfer points shall be included in the Title V permit renewal.
3		**T**			Att. B	This condition to install spray bars with a minimum of two spray heads s at feeds, transfers, and discharge points for a moisture content of <4% shall be included in the Title V permit renewal.
4			**T**			This condition limits the amount of ore transported but represents the maximum capacity of the conveyor system and is therefore removed.
5				**T**	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *A.A.C. R18-2-521.*
6			**T**			Since construction is complete, this condition is deleted as a part of this Title V permit renewal.
7				**T**	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Comply with Subpart "A".*
8				**T**	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Opacity observations.*
9				**T**	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Develop inspection, operating and maintenance procedures.*
10			**T**			Since construction is complete, this condition is deleted as a part of this Title V permit renewal.
11				**T**	Att. A	Condition is hereby streamlined as a part of this Title V permit renewal. *Permittee shall comply with all applicable regulations.*

INSTALLATION PERMIT NO. 2307

Cyprus obtained this installation permit for the El Jay portable crushing and screening plant in 1991.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
I			T			This condition voids the installation permit if construction is not commenced within 18 months. Because the equipment has been constructed this condition is hereby deleted as part of this Title V permit renewal.
II			T			This condition requires a written notification of startup. Because this requirement has been fulfilled, this condition is hereby deleted as part of this Title V permit renewal.
III				T	Att. A	Condition is hereby streamlined as a part of this Title V permit renewal. *Facilities Operation.*
IV				T	Att. A	Same as above. *Malfunction.*
V				T	Att. A	Same as above. *Right to Entry.*
VI				T	Att. A	Same as above. *Transfer of Ownership.*
VII				T	Att. A	Same as above. *Severability.*
VIII				T	Att. A	Same as above. *Permittee shall comply with all applicable regulations.*
IX				T	Att. A	Same as above. *Representations in Application for Permit and Exemption.*
X			T			The PM allowable in Att. B are the PTE for the source, and are therefore removed and replaced with the allowable given in A.A.C. R18-2-722.
XI			T			This condition prohibits normal operation of the equipment, except for testing purposes. Because the equipment is now included in an operating permit, this condition is hereby deleted as part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Streamline		
XII.A				T	Att. C	Condition is hereby streamlined as a part of this Title V permit renewal. *Comply with A.A.C. R18-2-622, 404-407.*
XII.B.1				T	Att. B	Same as above. *A.A.C. R18-2-702.B.*
XII.B.2			T			This condition imposes an emissions limit for PM and PM10. However, these numbers are simply the source's maximum potential to emit. Therefore, this condition is hereby deleted as part of this Title V permit renewal.
XII.C				T	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Use of Spray Bars.*
XII.D			T			This condition requires an equipment ID to be stenciled onto each piece of equipment. Cyprus has requested that this requirement be waived in lieu of posting a copy of the permit at each operations area.

Minor Permit Revision No. 1000030

This minor permit revision was issued to Cyprus in 1995 for the installation of one 6,000 hp Polysius roll crusher and two 40 hp Allis Chambers screens. A 16,000 scfm scrubber was also installed to control emissions from the roll crusher.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
II			T			Because the roll crusher no longer exists, this condition is deleted as a part of this Title V permit renewal. *Comply with A.A.C. R18-2-901.41.*
VIII.D			T			Same as above. *40 CFR 60.382 (PM limit).*
VIII.E	T				Att. B	This condition is in regards to the scrubber which receives emissions from the roll crusher. The roll crusher has been replaced, but the scrubber is still operated to control emissions, therefore, this condition will be modified to reflect this change.
VIII.F			T			Because the roll crusher no longer exists, this condition is deleted as a part of this Title V permit renewal. *40 CFR 60.384 - Monitoring of Scrubber.*
VIII.G			T			Same as above. *40 CFR 60.385 - Recordkeeping and Reporting.*
VIII.H			T			Same as above. *40 CFR 60.386 - Testing.*
XI			T			Same as above. *Relationship of Permit to SIP.*

SIGNIFICANT PERMIT REVISION NO. 1000088

Cyprus obtained this significant permit revision in 1994. It is for the installation of a 57,000 scfm wet scrubber, elision ID number 112, in replacement of the 16,000 scfm scrubber included in Minor Revision Number 100030. It was installed to control emissions from a roll crusher (which no longer exists) and two screens.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
III, V				T	Att. A	These conditions replace the requirements from Operating Permit #0317-84. Condition is hereby streamlined as a part of this Title V permit renewal. *Permit Deviation Reporting and Transfer of Permit.*
II				T	Att. A	Condition is hereby streamlined as a part of this Title V permit renewal. *Comply with A.A.C. R18-2-901.41.*
XI			T			This condition declares the significant revision as an installation permit for purposes of the SIP. This requirement is no longer applicable for purposes of the Title V permit renewal.
XII				T	Att. A	Condition is hereby streamlined as a part of this Title V permit renewal. *Compliance with Permit Conditions.*
XIII				T	Att. A	Same as above. *Permit Amendment or Revision.*
XIV				T	Att. A	Same as above. *Facility Change without Permit Revision.*
XV				T	Att. A	Same as above. *Property Rights.*
XVI				T	Att. A	Same as above. *Severability Clause.*
XVII				T	Att. A	Same as above. *Notification of Start-Up.*
VIII.D			T		Att. B	Alternate emission limitations for particulate matter and PM-10 deleted after netting exercise was performed with other emission credits.
VIII.E				T	Att. B	Condition is hereby streamlined as a part of this Title V permit renewal. *Install, Operate and Maintain Scrubber.*
VIII.F				T	Att. B	Same as above. *Monitoring.*
VIII.G				T	Att. B	Same as above. *Recordkeeping and Reporting.*
VIII.H			T		Att. B	Same as above. *Testing.*

MINOR PERMIT REVISION NO. 1000335

This minor permit revision was issued to Cyprus in 1996 for the installation of a new Allis Mineral Systems Mark II primary crusher, and to reconstruct the existing Duval portable primary crusher.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Streamline		
I				T	Att. B	Condition is hereby streamlined as part of the Title V renewal. *Comply with Subpart LL.*
II			T			The primary crusher has already been tested, so this condition has been deleted.
III				T	Att. B	Condition is hereby streamlined as part of the Title V renewal. *Monitoring.*
IV				T	Att. B	Same as above. *Recordkeeping and Reporting.*
V			T			The primary crusher has already been tested, so this condition has been deleted.

Minor Permit Revision no. 1000540

This minor permit revision was issued to Cyprus in 1997 for the installation of a pilot-scale autoclave and calciner plant with a dryer.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Streamline		
II			T			The pilot scale autoclave has not been included as part of the Title V renewal. Therefore no applicable regulations carry over from this minor revision.
VIII			T			Same as above.
VIII.J			T			Same as above.
VIII.K			T			Same as above.
VIII.L			T			Same as above.
VIII.M			T			Same as above.
VIII.N			T			Same as above.

Administrative Amendment no. 1000739

This administrative amendment was issued to Cyprus in 1998 to revise the name of the facility's General Manager. There were no new or revised permit conditions associated with this amendment.

Minor Permit Revision no. 1000696

This minor permit revision was issued to Cyprus in 1998 to relocate a primary crusher from the Sierrita Pit to the

Duval portable crusher location.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
I				T	Att. B	This condition is hereby streamlined in the Title V permit. *Emission Limits and Standards - A.A.C. R18-2-721.*
II				T	Att. B	Same as above. *Monitoring and Record Keeping.*

MINOR PERMIT REVISION NO. 1000877

This minor permit revision was issued December 7, 1998, and allowed the replacement of a baghouse used to control emissions from conveyor transfer with a wet scrubber (first conditions I, II and III). It also included applicable requirements for the dump hoppers originally permitted under minor revision #1000335 (second conditions II, III and IV).

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
I				T	Att. B	This condition is hereby streamlined in the Title V permit. *Emission Limits/Standards from A.A.C. R18-2-702 and -721.*
II				T	Att. B	Same as above. *Install, Operate and Maintain Scrubber.*
III				T	Att. B	Same as above. *Recordkeeping.*
II				T	Att. B	Same as above. *Emission Limits/Standards from A.A.C. R18-2-702 and -721.*
III				T	Att. B	Same as above. *Air Pollution Control Equipment.*
IV				T	Att. B	Same as above. *Recordkeeping.*

MINOR PERMIT REVISION NO. 1000998

This minor permit revision was issued March 10, 1999, and allowed the addition of a tertiary crusher at the test stand previously used for a roll crusher permitted under minor revision 10000030.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
II				T	Att. C	This condition is hereby streamlined in the Title V permit. *Comply with Subpart LL.*
VIII.D			T		Att. B	Alternate emission limitations for particulate matter and PM-10 deleted after netting exercise was performed with other emission credits.
VIII.E				T	Att. B	Same as above. *Install, operate and maintain scrubber.*
VIII.F				T	Att. B	Same as above. *Monitoring of scrubber.*
VIII.G				T	Att. B	Same as above. *Recordkeeping and Reporting.*
VIII.H				T	Att. B	Same as above. *Testing.*

MINOR PERMIT REVISION NO. 1001264

This minor permit revision was issued on August 22, 2000, and allowed the addition of four new three-way scalping screens in the fine crushing circuit.

CONDITION NO.	DETERMINATION				LOCATION IN TITLE V PERMIT	COMMENTS
	REVISE	KEEP	DELETE	STREAM-LINE		
Att B.I.A		X			Att B	Stack emission limit for particulate matter
Att B.I.B		X			Att B	Opacity limit for fugitives
Att B.II		X			Att B	Air pollution control requirement
Att B.III			X			Notification after initial startup will be done prior to Title V issuance.
Att B.IV		X			Att B	Periodic monitoring requirements for the scrubbing liquid flow rate and the pressure drop.
Att B.V			X			Initial testing on the new scalping screens

MINOR PERMIT REVISION NO. 1001450

This minor permit revision was issued on August 10, 2001, and allowed the replacement of a tertiary crusher and screen.

MINOR PERMIT REVISION NO. 1001697

This minor permit revision was issued on November 2, 2001, and allowed the addition of a leached molybdenum disulfide loadout screw conveyor.

VII. PERIODIC MONITORING

A. Mining, Fine Ore Crushing, Milling/Grinding and Flotation

1. Equipment Subject to Non-NSPS Particulate Matter and Opacity Standards

The sole method of ensuring compliance with the process weight rate equation is a Method 5 performance test. However, it is recognized that there must be monitoring requirements to ensure that the limit is being met at any given time. Therefore, ADEQ, in conjunction with the stakeholders of the Arizona Mining Association (AMA), developed a plan to utilize opacity observations to indicate proper operation of the control equipment.

This plan first involves a baseline Method 9 observation of each baghouse and scrubber stack that is subject to the requirements of this section. This baseline observation shall be conducted while the process and control equipment are operating at normal representative working conditions. Thereafter, the source shall conduct a visual survey of each process stack on a bi-weekly basis. If the observer identifies an emission point which exceeds the

established baseline, the observer shall, if practicable, conduct a Method 9 observation of the plume. If the opacity reading exceeds the baseline level, Permittee shall initiate corrective action to reduce emissions to below the baseline level.

The baseline established above is for the purpose of assisting the source in identifying the possible need for corrective action. It does not constitute an enforceable emission limit. In addition, there is no basis for concluding that a process source must maintain opacity at the baseline level in order to meet the particulate matter standard. As previously discussed, the plan outlined above simply identifies a possible need for corrective action.

2. Equipment Subject to 40 CFR 60, Subpart LL Particulate Matter and Opacity Standards

These units are subject to a stack opacity of 7% (unless controlled by a wet scrubber), with a opacity standard for fugitive emissions of 10%. The permittee is required to adopt bi-weekly visual surveys of the visible emissions to ensure compliance with the opacity limits.

The particulate matter standard is 0.05 grams per dry standard cubic meter. The permittee is required to install, calibrate, maintain and operate monitoring devices for continuous measurements of change in pressure of the gas stream through the scrubber and the scrubbing liquid flow rate. This is to ensure that the scrubber is operating properly. Also, the permittee is required to operate the air pollution control equipment in accordance with manufacturer's specifications.

3. Testing

Each of the primary crushers will be tested for particulate matter using Method 5 once in the permit term, if operated. Previous test results were very low, far below the allowable emissions. The comparison of PTE using AP-42 to allowable emissions were much closer, even assuming 99% control. For this reason, it was decided to test each primary crusher once in the permit term. The NSPS crusher will be tested first.

The Sierrita secondary and tertiary crushing system has six scrubbers (IDs 002-008) which share common central duct work (i.e. all emissions are vented to a central duct and the gas stream is then divided evenly to the six scrubbers). Two of the six scrubbers have been equipped to enable stack testing. These two representative scrubbers will be tested during the first year of the permit term. Representative stacks from the Esperanza fine ore bin and crushing area will be tested for particulate matter once in the permit term, if operated. Representative stacks from the Esperanza fine ore bin refer to testing one of the two stacks and using the results for both stacks. The PTE was close to the allowable for the Sierrita and Esperanza crushing circuits, even using a 99% control efficiency factor for high efficiency wet scrubbers. However, previous test results were much lower than the PTE using AP-42 emission factors. For these reasons, one test in the permit term is adequate. The two NSPS-limited scrubber stacks (IDs 074 and 112) will be tested for particulate matter once in the permit term.

B. Molybdenum Plant

1. Sulfur Dioxide

The Permittee is required to meet the 90% sulfur removal requirement from A.A.C. R18-2-721.E. The lime slurry scrubbers which are used to control sulfur dioxide emissions

from the molybdenum roasting are periodically shut down in order to remove the thick slurry cake which accumulates on all surfaces in the scrubber. PDSI's previous permit allowed a bypass of the scrubber for not more than 3 hours a day twice a week, while continuing feed to the roaster. The bypass mode has been eliminated in the permit. The new method of operation is to terminate the feed to the roaster on which scrubber/equipment maintenance is to be performed for the feed termination delay time, a period of approximately 8 hours (this is the time when 90% of the sulfur dioxide in the feed has been removed). After feed termination is complete, the off gases are diverted to the maintenance stack or operating scrubber.

The roaster feed is sampled and analyzed for sulfur content daily. Compliance with the sulfur limit is determined in two ways. The Permittee must perform an annual compliance test for sulfur. During this performance test, the pH of the scrubber underflow is monitored and recorded. Between compliance tests, the pH is monitored daily. If the pH of the scrubber underflow is below 3.5 s.u., scrubber/equipment maintenance operating procedures are initiated.

The Permittee also has to keep a log of roaster operations and the operations of the air pollution control equipment. This includes the date, time and purpose of each initiation of the scrubber/equipment maintenance operating procedures, and the results of the inspection conducted after the switch back from maintenance to normal operations.

2. Opacity

The permittee is subject to A.A.C. R18-2-702.B, which limits the opacity to 40%. The opacity monitoring follows the same procedures as presented in paragraph A.1 of this section.

3. Testing

The molybdenum roasters will be tested annually for particulate matter using Method 5 and sulfur dioxide using Method 6. In addition, the feed delay termination time will be tested semi-annually, through the roaster profile test.

4. As an alternative to the feed termination delay procedures noted above, PDSI has requested, as an alternate operating scenario, the option to demonstrate compliance with the sulfur capture requirements of R18-2-721.E/R9-3-521 through the use of a continuous monitoring system to measure sulfur dioxide emissions from the main stack and a measurement of input sulfur to the roasters. The permit requires approval by the Director of a quality assurance/quality control plan for the operation of the sulfur dioxide continuous monitoring system and the measurement of roaster input sulfur.

C. Nonpoint Sources and Haul Roads

Non-point sources are subject to the 40% opacity standard and other Article 6 requirements. Periodic monitoring for opacity standard entails a bi-weekly visible emissions survey in accordance with an ADEQ - approved observation plan, by a certified Method 9 observer. If the visible emissions survey indicates that a Method 9 reading may be required, the observer shall do so, and maintain records of the results. Any observed exceedance of the opacity standard should be reported appropriately.

Article 6 regulations also contain applicable requirements for non-point source emissions. These

regulations require the Permittee to employ various control methods to suppress particulate emissions. The permit lists the various methods of dust suppression that may be used. By not restricting the Permittee to use only one of the methods, the permit provides the flexibility required to facilitate employment of effective control measures. Periodic monitoring data for these applicable requirements is generated in two ways by this permit :

(i) the bi-weekly visual opacity observations conducted as monitoring for the 40% opacity standard will provide data that can be used to investigate the level of particulate emissions from non-point sources during a compliance timeframe.

(ii) the Permittee is required to maintain a record of the kind of control measures that were employed to suppress particulate emissions. This periodic monitoring requirement is specified in the "Non Point Sources" section of Attachment B of the permit. In recognition of the fact that this requirement may sometimes be highly paper-intensive and result in reduced flexibility of operations, the permit provides an alternative that the Permittee may maintain a Non-Point Source Monitoring Plan that serves as a record of the control measures that were employed by the Permittee to mitigate dust emissions from non-point sources. To satisfy its function as a monitoring tool, the Non-Point Source Monitoring Plan should contain some minimum elements of information such as :

(1) Types of control measures employed on an activity-specific basis;
(2) Frequency of application of control measures;
(3) A system for logging variations from the strategy outlined in the Non-Pont Source Monitoring Plan

The Non-Point Source Monitoring Plan has to be submitted as part of the initial application, and will undergo public and EPA review along with the rest of the permit. If the Permittee fails to submit the Non-Point Source Monitoring Plan along with the initial application, the Permittee will be required to comply with the monitoring requirements, till such time that a significant revision is processed to allow the Permittee to utilize the Monitoring Plan. As part of the significant revision procedures, the Non-Point Source Monitoring Plan will undergo public and EPA review.

It should be noted that the Non-Point Source Monitoring Plan is a monitoring tool. Additions to methods listed in the original Non-Point Source Monitoring Plan need to be notified to the Director. These notifications will have to be recorded in the Non-Point Source Monitoring Plan by the Permittee, and will also be added to the copy of the Non-Point Source Monitoring Plan that is maintained at ADEQ. There is one situation where prior approval from the Director is required. The permit lists a series of "reasonable precautions" that may be employed by the Permittee. If the Permittee desires to use a new method, prior approval for usage of this mechanism has to be obtained from the Director. Once approval is granted, the Permittee can initiate usage of the product, and record its usage in the Non-Point Source Monitoring Plan.

There are additional requirements included that are a result of the Consent to Order of Abatement, taken from PDSI's Tailings Impoundment Dust Control Management Plan. These additional requirements include daily visual inspections and weekly environmental activities reports which contain information on the current area of deposition, the number of loads applied by each water truck, and the area of chemical dust suppressant application.

D. Solution Extraction and Electro-winning

The intent of A.A.C. R18-2-730.D (P.C.C. 17.16.430) as applicable to SX/EW process is to limit

emissions from the equipment and operations associated with the SX/EW process so as to not cause air pollution. PDSI uses covered fixed roof mixer/settler tanks for all SX facilities and their associated ancillary process tanks. The potential emissions from these tanks as estimated by the worksheet developed by ADEQ for fixed roof tanks total 7.95 tpy which is considerably below the significance level established for VOCs in A.A.C. R18-2-101.97.

The intent of A.A.C. R18-2-730.F as applicable to the SX/EW process is to reduce evaporation of materials into the atmosphere used in the SX/EW process at various stages (processing, storage, usage, and transportation) so as to not cause air pollution. The Permittee uses covered mixer/settler and ancillary process tanks in the SX/EW process. The VOC emission levels are well below the significance level of 40 tpy.

E. Natural Gas Fired Boilers

Natural gas combustion results in negligible particulate matter emissions. A.A.C. R18-2-724.J (P.C.C. 17.16.160) imposes a visible emissions standard of 15 percent opacity in any six-minute period. Compliance with the opacity standard should not be a problem as is evident from the absence of monitoring requirements for NSPS boilers less than 30 MMBtu/hr capacity for combusting low sulfur oil. The permittee is required to report all instances in which the opacity exceeds 15 percent for 6 consecutive minutes.

For installations subject to A.A.C. R18-2-724 and burning low sulfur fuel oil (#2 diesel), the sulfur dioxide standard has been established at 1.0 lb SO2 per million Btu heat input. The estimated sulfur dioxide emission from the burning of low fuel oil assuming 0.4% sulfur content and using factors given in AP-42 is 0.414 lb SO2 per million Btu heat input. In order to determine compliance with the sulfur dioxide limits/standards for installations burning natural gas, the source shall maintain a copy of the FERC agreement for natural gas.

VIII. INSIGNIFICANT ACTIVITIES

NO.	ACTIVITY	DETERMINATION	COMMENT
1	Landscaping, building maintenance, and janitorial activities	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.a
2	Gasoline storage tanks with a capacity of 10,000 gallons or less	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.b
3	Diesel and fuel oil storage tanks with a capacity of 40,000 gallons or less	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.c
4	Batch mixers with rated capacity of 5 cubic yards or less.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.d
5	Hand-held or manually operated equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding for leather, metals, plastics, fiberboard, carbon, glass or wood	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.f

NO.	ACTIVITY	DETERMINATION	COMMENT
6	IC engine-driven compressors, generator sets, water pumps used only for emergency replacement or standby service	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.h
7	Emissions from lab equipment used exclusively for chemical and physical analysis.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.i
8	Cafeterias, kitchens or other facilities used for food or beverage preparation	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
9	Equipment using water, water and soap or detergent, or a suspension of abrasives in water for purposes of cleaning or finishing	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
10	Aerosol can usage	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
11	Acetylene, butane and propane torches	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
12	Equipment for portable steam cleaning	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
13	Blast-cleaning equipment using a suspension of abrasive in water and any exhaust system or collector serving them exclusively	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
14	Lubricating system reservoirs	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
15	Hydraulic system reservoirs	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
16	Adhesive use which is not related to production	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
17	Production of hot/chilled water for onsite use not related to an industrial process	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
18	Safety devices such as fire extinguishers	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
19	General vehicle maintenance and servicing activities	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
20	Storage cabinet for flammable materials	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
21	Housekeeping activities and associated products for cleaning purposes and operation of vacuum cleaning systems	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j

NO.	ACTIVITY	DETERMINATION	COMMENT
22	Air conditioning, cooling, heating or ventilation equipment not designated to remove air contaminants	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
23	General office activities such as paper shredding and copying, photographic activities, and blueprinting	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
24	Restroom facilities and associated cleanup operations, stacks, and vents	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
25	Smoking rooms and areas	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
26	Normal consumer use of consumer products, including hazardous substances as defined under Federal Hazardous Substances Act (15 U.S.C. 1261 et. seq.)	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
27	Propane vaporizer	No	Subject to AAC R18-2-730
28	Methyl Isobutyl Carbinol (MIBC) used as flotation agent	No	Subject to AAC R18-2-730
29	Vacuum cleaning systems where the system is used exclusively for industrial or commercial use.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
30	Water treatment or storage for boiler feed water.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
31	Water treatment or storage or cooling systems for process water.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
32	Chemical storage associated with water and wastewater treatment where the water is treated for consumption and/or use within the permitted facility (limited to chemicals not listed in 40 CFR 68.13, chemicals listed in 40 CFR 68.13 but stored in quantities less than threshold levels, and not subject to any applicable regulation under the Act or the Arizona Revised Rules).	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
33	The collection, transmission, liquid treatment and solid treatment process and domestic type wastewater and sewage treatment, or treatment facilities, including septic tank systems which treat only domestic type waste water and sewage.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j

NO.	ACTIVITY	DETERMINATION	COMMENT
34	Chemical storage and process holding tanks (limited to chemicals not listed in 40 CFR 68.13, chemicals listed in 40 CFR 68.13 but stored in quantities less than threshold levels, and not subject to any applicable regulation under the Act or the Arizona Revised Rules).	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
35	Storage and piping of natural gas or liquified petroleum gas.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
36	Petroleum product storage tanks containing lubricating oil, transformer oil, or used oil.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
37	Distribution and piping of diesel fuel, lubricating oil, used oil, and transformer oil.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
38	Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading (includes containers of RCRA waste and used oil).	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
39	Waste motor oil collection and recycling.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
40	Storage tanks of any size containing exclusively soaps, detergents, waxes, greases, aqueous caustic solutions, or aqueous salt solutions.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
41	Use of pesticides, fumigants and herbicides.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
42	Air lance operations.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
43	Mechanized or manual cleanup and haulage.	No	Subject to Article 6
44	Waste concrete handling.	No	Subject to Article 6
45	Railroad Maintenance	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
46	Potable well field maintenance.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
47	Cleanup of stormwater conveyance systems	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
48	Cleanup of stormwater collection devices	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
49	Cleanup of railcars	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j

NO.	ACTIVITY	DETERMINATION	COMMENT
50	Cleanup of clogged chutes	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
51	Manual cleanup around conveyor belts and chutes	No	Subject to Article 6
52	Street and parking lot striping	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
53	Maintenance, repair or dismantlement of buildings, utility lines, pipelines, wells, and other structures that do not constitute an emission unit.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
54	Individual sampling points, analyzers, and process instrumentation, whose operation may result in emissions.	No	Subject to R18-2-730
55	Brazing, soldering or welding operations	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
56	Battery recharging areas	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
57	Plastic pipe welding	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
58	Equipment used exclusively for potable steam cleaning.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
59	Surface impoundments such as ash ponds, cooling ponds, evaporation ponds, settling ponds and stormwater ponds.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
60	Pump/motor oil reservoirs, such as gear box lubrication.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
61	Transformer vents.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
62	Caulking operations that are not part of a production process.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
63	Electric motors.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
64	Cathodic protection systems.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
65	Soil gas sampling.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
66	Filter draining.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j

NO.	ACTIVITY	DETERMINATION	COMMENT
67	General vehicle maintenance and servicing activities at the source.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
68	Station transformers	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
69	Circuit breakers	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
70	Generation unit gas vents.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
71	HVAC units.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
72	Wet cyclones and the ball mill circuits operated at the concentrator.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
73	Copper and molybdenite floatation.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
74	Copper concentrate filtering.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
75	General research activities such as testing water mist / spray controls for dust abatement.	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
76	Filter press vacuum manifolds	Yes	Insignificant pursuant to A.A.C. R18-2-101.57.j
77	Chlorine Gas Unloading	No	Subject to R18-2-730 and Section 112(r)